

## Informal Assessment of Fatigue and Learning

Student Name \_\_\_\_\_ Grade \_\_\_\_\_ School \_\_\_\_\_ Date \_\_\_\_\_

The purpose of these scales is to estimate student fatigue and potential impact on learning. Read the items on this page to students (grades 4-9) or ask them to complete the brief checklists independently. Compare with age norms.

<b>Learning Effort-Reward Imbalance (LERI) Scale</b>		
1. When I am in school or during class, I must often stop my learning because the actions or noises of other students disturbs me	<b>Yes</b>	<b>No</b>
2. I should be performing well in class or be a well-behaved child	<b>Yes</b>	<b>No</b>
3. I often do extra learning outside of school (more homework or tutoring than my class mates)	<b>Yes</b>	<b>No</b>
4. My family members or teachers let me know how much they appreciate my learning in school	<b>Yes</b>	<b>No</b>
5. My friends let me know regarding my learning in school	<b>Yes</b>	<b>No</b>
6. I am afraid that I will not be able to catch up with learning in school in the future	<b>Yes</b>	<b>No</b>
7. My school grades depend on my effort in learning	<b>Yes</b>	<b>No</b>
8. I have a promising future because of my effort and grades	<b>Yes</b>	<b>No</b>
9. As soon as I get up every morning, I begin to think about learning in school	<b>Yes</b>	<b>No</b>
10. I am almost always thinking about learning in school, when I am going to bed	<b>Yes</b>	<b>No</b>

Orange items total

Green (light + dark) items total

Yellow items total

<b>Fatigue Scale</b>					
<b>0 = less of a problem than is usual for my age</b>	<b>2 = more than usual</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>
<b>1 = no more than usual</b>	<b>3 = much more than usual</b>				
1. Do you have problems with tiredness?					
2. Do you need to rest more?					
3. Do you feel sleepy or drowsy?					
4. Do you have problems starting things?					
5. Do you lack energy?					
6. Do your muscles have less strength (feel weak)?					
7. Do you feel weak?					
8. Do you have trouble concentrating?					
9. Do you make slips of the tongue when speaking?					
10. Do you find it more difficult than others to find the correct word?					
11. How is your memory?					
<b>Fatigue Total</b>					

As compared to responses for typically developing students in his/her age range this student is  
 ○ typical    ○ at risk (consequences of fatigue include refusal to attend school, depression, behavioral problems and decreased academic performance). Comments:

Adapted 2014 by Karen Anderson, PhD from Fukuda, S., et al, (2010) Effort-reward imbalance for learning is associated with fatigue in school children. *Behavioral Medicine*, 36(2), 53-62; authors of the LERI Scale. Research results incorporated use of the Chalder Fatigue Scale, as shown above.

## SCORING the Informal Assessment of Fatigue and Learning

**Scoring the Learning Effort-Reward Imbalance (LERI) Scale: Yes = 2, No = 1 point**

**Orange items = effort score**

**Green (light + dark) items = reward score**

**Yellow items = over-commitment score**

**LERI Ratio = (orange/effort total ÷ green/reward total) x 1.33**

	Elementary School (gr 4-6)				Secondary School (gr 7-9)			
	Boys		Girls		Boys		Girls	
	Mean	95% Confidence Interval	Mean	95% Confidence Interval	Mean	95% Confidence Interval	Mean	95% Confidence Interval
<b>Fatigue score</b>	14.5	13.66 to 15.34	14.1	13.37 to 14.83	17.6	16.82 to 18.38	19.2	18.66 to 19.73
<b>Effort score</b>	4.2	4.09 to 4.29	4.1	4.04 to 4.22	4.4	4.37 to 4.43	4.3	4.23 to 4.38
<b>Reward score</b>	6	5.82 to 6.12	6.1	5.99 to 6.25	5.7	5.55 to 5.79	5.6	5.53 to 5.71
<b>OC score</b>	3.7	3.61 to 3.81	3.7	3.57 to 3.73	3.5	3.41 to 3.55	3.5	3.44 to 3.54
<b>LERI ratio</b>	0.98	0.95 to 1.01	0.95	0.92 to 0.98	1.07	1.04 to 1.10	1.08	1.06 to 1.10
<b># hours of sleep</b>	8.4	8.2 to 8.53	8.3	8.16 to 8.34	7.4	7.25 to 7.45	7.0	6.9 to 7.04

To be considered typical, a student's scores must fall within the 95% confidence range for their gender and age group. Scores not falling within the typical range can be considered at higher risk for school issues due to fatigue or excessive effort. Associated consequences include refusal to attend school, depression, behavioral problems and decreased academic performance. NOTE: research has shown that children with hearing loss can underestimate their level of expended fatigue and resulting effort.

**Example:** A 5<sup>th</sup> grade student with hearing loss named Maria responded yes to all of the effort items (score of 6). For the reward items numbers 4, 5, 8 were marked no (3 points) and numbers 6 and 7 were marked yes (score of 4). Number 9 was marked yes (2 points) and number 10 was marked no (1 point). Totals were:

**Orange/Effort items total 6    Green/reward items total 7    Yellow/over-commitment items total 3**

The LERI ratio was  $6 \div 7 \times 1.33$  or  $0.857 \times 1.33 = 1.14$     Marie reported getting 8 hours of sleep per night.

On the Fatigue Scale items 1, 2, 4, 8 and 10 were all marked 2 (10 points), items 3, 9, and 11 were marked 3 (9 points), items 5, 6 and 7 were marked 1 (3 points). Her Fatigue Scale total was 22.

Maximum typical Fatigue score = 14.83	Maria's Fatigue score = 22	Area of concern? <b>Yes</b>
Maximum typical Effort score = 4.22	Maria's Effort score = 6	Area of concern? <b>Yes</b>
Maximum typical Reward score = 6.25	Maria's Reward score = 7	Area of concern? <b>Yes</b>
Maximum typical Over-Commitment score = 3.73	Maria's score = 3	Area of concern? <b>No</b>
Maximum typical LERI ratio = 0.98	Maria's LERI ratio = 1.14	Area of concern? <b>Yes</b>
Maximum typical hours of sleep = 8.34	Maria's hours of sleep = 8	Area of concern? <b>No</b>

Maria's is expending more effort in school than her return of rewards resulting in a high level of fatigue, likely due to her listening challenges in the classroom and learning gap that has increased over the last 3 years. She requires accommodations to decrease her level of fatigue and consider reducing her workload (i.e., half of the items for each homework assignment) and team consideration of the need for other supports to address her increasing learning gap.